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10/710,998	08/16/2004	Anand Shridhar SAWANT	TI-36864	4997

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EXAMINER	
MORRISON, JAY A	

ART UNIT	PAPER NUMBER
2168	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

uspto@ti.com

Office Action Summary	Application No.	Applicant(s)	
	10/710,998	SAWANT ET AL.	
	Examiner	Art Unit	
	JAY A. MORRISON	2168	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 November 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-11,13-20,22,23 and 25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-11,13-20,22,23 and 25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Remarks

1. Claims 1, 3-11, 13-20, 22, 23 and 25 are pending.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1, 3-4, 11, 13-14, 20 and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki (Patent Number 6,604,170) in view of Fry et al. ('Fry' hereinafter) (Patent Number 6,775,745) and further in view of Cohen et al. ('Cohen' hereinafter) (Patent Number 5,761,680).

As per claim 1, Suzuki teaches

A method of accessing data contained in a first file, wherein said first file is comprised in a plurality of files stored on a secondary storage, said secondary storage comprising a plurality of clusters, wherein a cluster is a basic unit of allocation for storing data related to a file and is identified on said secondary storage by a corresponding one of a plurality of identifiers, a file allocation table (FAT) indicating a corresponding set of clusters allocated to each of said plurality of files by associating the corresponding set of identifiers with each file whereby said FAT indicates that a first set of clusters are allocated to said first file by associating a first set of identifiers with said first file each of said first set of identifiers identifying that a corresponding one of said first set of clusters is allocated to said first file, said first set of identifiers being

contained in said plurality of identifiers, said FAT being stored on said secondary memory, said method being performed in a single device, said method comprising: (see abstract and background)

stored in said secondary memory; (EXT-FAT items, column 6, lines 55-67)

Suzuki does not explicitly indicate "storing said first set of identifiers associated with said first file in a random access memory (RAM) indicating that said first set of clusters store data related to said file; and retrieving at least a portion of said first file from said secondary storage based on said first set of identifiers stored in said RAM, wherein said determining and said storing are performed when the content of said first file is to be retrieved from said secondary storage for processing."

However, Fry discloses " storing said first set of identifiers associated with said first file in a random access memory (RAM) indicating that said first set of clusters store data related to said file;" (read FAT into memory from the beginning cluster number, column 5, lines 12-15) "and retrieving at least a portion of said first file from said secondary storage based on said first set of identifiers stored in said RAM, wherein said determining and said storing are performed when the content of said first file is to be retrieved from said secondary storage for processing" (if data not in RAM then data read from disk, column 5, lines 27-35).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Suzuki and Fry because using the steps of "storing said first set of identifiers associated with said first file in a random access memory (RAM) indicating that said first set of clusters store data related to said file; and retrieving at

least a portion of said first file from said secondary storage based on said first set of identifiers stored in said RAM, wherein said determining and said storing are performed when the content of said first file is to be retrieved from said secondary storage for processing" would have given those skilled in the art the tools to improve the invention by minimizing overhead and seeks. This gives the user the advantage of improved system performance.

Neither Suzuki nor Fry explicitly indicate "said FAT storing said first set of identifiers in non-contiguous entries of said FAT in the form of a linked list, wherein an order specified by said linked list indicates the sequence in which said set of clusters are used to store data contained in said first file" and "traversing said linked list to retrieve said first set of identifiers in said order, wherein said traversing is performed by retrieving and examining said non-contiguous entries of said FAT".

However, Cohen discloses "said FAT storing said first set of identifiers in non-contiguous entries of said FAT in the form of a linked list, wherein an order specified by said linked list indicates the sequence in which said set of clusters are used to store data contained in said first file" (cluster numbers stored in FAT where the FAT provides a linked list of cluster numbers to locate files on disk, column 5, lines 9-17; note that it is inherent in the FAT/linked-list arrangement that as smaller files are deleted and larger files are stored that non-contiguous entries will occur in the FAT and the clusters on disk) and "traversing said linked list to retrieve said first set of identifiers in said order, wherein said traversing is performed by retrieving and examining said non-contiguous entries of said FAT" (linked list of cluster numbers to locate files on disk, column 5, lines

9-17; note that traversal of a FAT linked list is necessary to retrieve non-contiguous cluster entries for files).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Suzuki, Fry and Cohen because using the steps of "said FAT storing said first set of identifiers in non-contiguous entries of said FAT in the form of a linked list, wherein an order specified by said linked list indicates the sequence in which said set of clusters are used to store data contained in said first file" and "traversing said linked list to retrieve said first set of identifiers in said order, wherein said traversing is performed by retrieving and examining said non-contiguous entries of said FAT" would have given those skilled in the art the tools to improve the invention by using linked list of cluster numbers in the FAT to defrag a swap file so that it is no longer stored in non-contiguous clusters. This gives the user the advantage of faster seek time on the hard drive resulting in much faster system operation and better performance.

As per claim 3, Suzuki teaches

said first set of identifiers are stored according to a technique which permits each of said first set of identifiers to be retrieved with fewer instructions than the number of instructions required to access the same identifier from said FAT in said secondary storage. (column 12, lines 35-40)

As per claim 4,

Suzuki does not explicitly indicate "wherein said first set of identifiers are stored in the form of an array in said RAM which permits each identifier to be retrieved by a single access".

However, Fry discloses "wherein said first set of identifiers are stored in the form of an array in said RAM which permits each identifier to be retrieved by a single access" (column 5, lines 57-65).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Suzuki and Fry because using the steps of "wherein said first set of identifiers are stored in the form of an array in said RAM which permits each identifier to be retrieved by a single access" would have given those skilled in the art the tools to improve the invention by minimizing overhead and seeks. This gives the user the advantage of improved system performance.

As per claims 11 and 13-14,

These claims are rejected on grounds corresponding to the arguments given above for rejected claims 1 and 3-4, respectively, and are similarly rejected.

As per claims 20 and 22-23,

These claims are rejected on grounds corresponding to the arguments given above for rejected claims 1 and 3-4, respectively, and are similarly rejected.

4. Claims 5, 16 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki (Patent Number 6,604,170) in view of Fry et al. ('Fry' hereinafter) (Patent Number 6,775,745) and further in view of Cohen et al. ('Cohen' hereinafter) (Patent Number 5,761,680) and further in view of Wong et al. ('Wong' hereinafter) (Patent Number 5,890,169).

As per claim 5,

Neither Suzuki, Fry nor Cohen explicitly indicate "receiving a start offset of data to be accessed; computing a cluster index by dividing said start offset by a number of bytes in each of said plurality of clusters; and accessing said array using said cluster index to determine a specific one of said first set of identifiers, wherein said data to be accessed is present in a cluster identified by said specific one of said first set of identifiers."

However, Wong discloses "receiving a start offset of data to be accessed; computing a cluster index by dividing said start offset by a number of bytes in each of said plurality of clusters; and accessing said array using said cluster index to determine a specific one of said first set of identifiers, wherein said data to be accessed is present in a cluster identified by said specific one of said first set of identifiers" (column 22, line 61 through column 23, line 7).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Suzuki, Fry, Cohen and Wong because using the steps of "receiving a start offset of data to be accessed; computing a cluster index by dividing

said start offset by a number of bytes in each of said plurality of clusters; and accessing said array using said cluster index to determine a specific one of said first set of identifiers, wherein said data to be accessed is present in a cluster identified by said specific one of said first set of identifiers" would have given those skilled in the art the tools to improve the invention by maximizing I/O performance. This gives the user the advantage of better use of computing resources giving better response times.

As per claim 16,

This claim is rejected on grounds corresponding to the arguments given above for rejected claim 5 and is similarly rejected.

As per claim 25,

This claim is rejected on grounds corresponding to the arguments given above for rejected claim 5 and is similarly rejected.

5. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki (Patent Number 6,604,170) in view of Fry et al. ('Fry' hereinafter) (Patent Number 6,775,745) and further in view of Wong et al. ('Wong' hereinafter) (Patent Number 5,890,169) and further in view of Cohen et al. ('Cohen' hereinafter) (Patent Number 5,761,680) and further in view of Isozaki (Patent Number 6534701).

As per claim 6, Suzuki teaches

using said first set of identifiers stored in said RAM (column 6, lines 55-67)

Neither Suzuki, Fry, Cohen nor Wong explicitly indicate "data stored in said first file represents a song and wherein said single device is designed to play said song based on the stored data, said method further comprising: receiving a request for rewind operation requiring access to data in a previous cluster when playing said song; accessing the data in said previous cluster".

However, Isozaki discloses "data stored in said first file represents a song and wherein said single device is designed to play said song based on the stored data" (files on memory card, column 2, lines 56-65; MIDI sequencer, column 3, lines 60-62) "said method further comprising: receiving a request for rewind operation requiring access to data in a previous cluster when playing said song;" (column 3, lines 52-55) "accessing the data in said previous cluster" (column 3, lines 17-25).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Suzuki, Fry, Cohen, Wong and Isozaki because using the steps of "data stored in said first file represents a song and wherein said single device is designed to play said song based on the stored data, said method further comprising: receiving a request for rewind operation requiring access to data in a previous cluster when playing said song; accessing the data in said previous cluster" would have given those skilled in the art the tools to improve the invention by providing more functionality in musical devices. This gives the user the advantage of more choices of features among products available.

6. Claims 7-10 and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki (Patent Number 6,604,170) in view of Fry et al. ('Fry' hereinafter) (Patent Number 6,775,745) and further in view of Hylands et al. ('Hylands' hereinafter) (Publication Number 2004/0205697) and further in view of Cohen et al. ('Cohen' hereinafter) (Patent Number 5,761,680).

As per claim 7,

A method of implementing an application in a system containing a small memory in the form of a random access memory (RAM), wherein said system supports a file system on a secondary storage, wherein said secondary storage comprises a plurality of clusters each identified by a corresponding identifier in said secondary storage, wherein said file system comprises a plurality of files and each of said plurality of files is stored in a corresponding one of a plurality of sets of clusters, said plurality of sets of clusters being contained in said plurality of clusters, said method comprising: (see abstract and background)

providing a first module which is designed to determine a plurality of identifiers corresponding to a specified file and store said plurality of identifiers in said RAM according to a convention, wherein said plurality of identifiers specify a set of clusters corresponding to said specified file, said set of clusters being contained in said plurality of sets of clusters; (EXT-FAT items, column 6, lines 55-67)

providing a second module which is to perform an operation on a file of interest, wherein said second module is designed to determine a desired cluster by using said plurality of identifiers stored in said RAM according to said convention; (figure 9, column 6, lines 55-67; column 9, lines 25-32)

Suzuki does not explicitly indicate "executing said first module when the content of said specified file is to be retrieved from said secondary storage for processing such that only a portion of said FAT including data indicating that said plurality of identifiers identify the clusters storing data related to said specified file is stored in said small memory, wherein said first module is executed while specifying said file of interest as said specified file such that a said plurality of identifiers corresponding to said file of interest are stored in said RAM according to said convention".

However, Fry discloses "executing said first module when the content of said specified file is to be retrieved from said secondary storage for processing such that only a portion of said FAT including data indicating that said plurality of identifiers identify the clusters storing data related to said specified file is stored in said small memory, wherein said first module is executed while specifying said file of interest as said specified file such that a said plurality of identifiers corresponding to said file of interest are stored in said RAM according to said convention" (read FAT into memory from the beginning cluster number, column 5, lines 12-15; if data not in RAM then data read from disk, column 5, lines 27-35).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Suzuki and Fry because using the steps of "executing

said first module when the content of said specified file is to be retrieved from said secondary storage for processing such that only a portion of said FAT including data indicating that said plurality of identifiers identify the clusters storing data related to said specified file is stored in said small memory, wherein said first module is executed while specifying said file of interest as said specified file such that a said plurality of identifiers corresponding to said file of interest are stored in said RAM according to said convention" would have given those skilled in the art the tools to improve the invention by reduce the load on the file system and increase performance. This gives the user the advantage of faster access to disk resources.

Neither Suzuki nor Fry explicitly indicate "and executing said second module after executing said first module, wherein both of said first module and said second module are executed using at least some of the same locations of said small memory."

However, Hylands discloses "and executing said second module after executing said first module, wherein both of said first module and said second module are executed using at least some of the same locations of said small memory" (overlays, paragraph [0020]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Suzuki, Fry and Hylands because using the steps of "and executing said second module after executing said first module, wherein both of said first module and said second module are executed using at least some of the same locations of said small memory" would have given those skilled in the art the tools to

improve the invention by minimizing overhead and seeks. This gives the user the advantage of improved system performance.

Neither Suzuki, Fry nor Hylands explicitly indicate "a file allocation table (FAT) stored on said secondary storage storing identifiers of each file in said plurality of files in non-contiguous entries of said FAT in the form of a corresponding linked list, wherein an order specified by said linked list indicates the sequence in which clusters are used to store data contained in a corresponding file" and "by traversing said linked list to retrieve said plurality of identifiers in a corresponding order, wherein said traversing is performed by retrieving and examining said non-contiguous entries of said FAT"

However, Cohen discloses "a file allocation table (FAT) stored on said secondary storage storing identifiers of each file in said plurality of files in non-contiguous entries of said FAT in the form of a corresponding linked list, wherein an order specified by said linked list indicates the sequence in which clusters are used to store data contained in a corresponding file" (cluster numbers stored in FAT where the FAT provides a linked list of cluster numbers to locate files on disk, column 5, lines 9-17; note that it is inherent in the FAT/linked-list arrangement that as smaller files are deleted and larger files are stored that non-contiguous entries will occur in the FAT and the clusters on disk) and "by traversing said linked list to retrieve said plurality of identifiers in a corresponding order, wherein said traversing is performed by retrieving and examining said non-contiguous entries of said FAT" (linked list of cluster numbers to locate files on disk, column 5, lines 9-17; note that traversal of a FAT linked list is necessary to retrieve non-contiguous cluster entries for files).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Suzuki, Fry, Hylands and Cohen because using the steps of "a file allocation table (FAT) stored on said secondary storage storing identifiers of each file in said plurality of files in non-contiguous entries of said FAT in the form of a corresponding linked list, wherein an order specified by said linked list indicates the sequence in which clusters are used to store data contained in a corresponding file" and "by traversing said linked list to retrieve said plurality of identifiers in a corresponding order, wherein said traversing is performed by retrieving and examining said non-contiguous entries of said FAT" would have given those skilled in the art the tools to improve the invention by using linked list of cluster numbers in the FAT to defrag a swap file so that it is no longer stored in non-contiguous clusters. This gives the user the advantage of faster seek time on the hard drive resulting in much faster system operation and better performance.

As per claim 8,

Neither Suzuki nor Fry explicitly indicate "said second module is overlaid on the same memory space on which said first module is loaded during execution."

However, Hylands discloses "said second module is overlaid on the same memory space on which said first module is loaded during execution" (paragraph [0020]-[0021])

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Suzuki, Fry and Hylands because using the steps of

"said second module is overlaid on the same memory space on which said first module is loaded during execution" would have given those skilled in the art the tools to improve the invention by allowing a program with large memory requirements to fit into a small memory footprint. This gives the user the advantage of being able to run larger programs with less memory resources.

As per claim 9,

Neither Suzuki nor Fry explicitly indicate "said convention comprises storing said plurality of identifiers at a prespecified portion of said RAM."

However, Hylands discloses "said convention comprises storing said plurality of identifiers at a prespecified portion of said RAM" (target memory, paragraph [0049]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Suzuki, Fry and Hylands because using the steps of "said convention comprises storing said plurality of identifiers at a prespecified portion of said RAM" would have given those skilled in the art the tools to improve the invention by allowing a program with large memory requirements to fit into a small memory footprint. This gives the user the advantage of being able to run larger programs with less memory resources.

As per claim 10, Suzuki teaches

each of said plurality of files stores data representing a corresponding song. (data on the disk, column 6, lines 30-42; note: a song is nonfunctional descriptive

material and are not functionally involved in the steps recited. Thus, this descriptive material will not distinguish the claimed invention from the prior art in terms of patentability, see In re Gulack, 703 F.2d 1381, 1385, 217 USPQ 401, 404 (Fed. Cir. 1983); In re Lowry, 32 F.3d 1579, 32 USPQ2d 1031 (Fed. Cir. 1994).)

As per claims 17-19,

These claims are rejected on grounds corresponding to the arguments given above for rejected claims 7-9 and are similarly rejected.

Response to Arguments

7. Applicant's arguments, see page 10, filed 11/7/2008, with respect to the 35 USC 101 rejections as non-statutory have been fully considered and are persuasive. The 35 USC 101 rejections of claims 11, 13-14 and 16-19 have been withdrawn. It is noted that the specification as originally filed, paragraph [0099], appears to contain support for such a machine readable non-volatile storage medium.

8. Applicant's arguments filed 11/7/2008 have been fully considered but they are not persuasive. Applicant argues that neither Fry nor Suzuki disclose storing in RAM those identifiers of a file which are determined by traversing the linked list in the FAT stored in secondary memory. Respectfully, Fry discloses storing portions of FAT in RAM

(page 5, lines 12-18), however the additional limitations are taught by the newly added Cohen reference as shown in the rejections above. Therefore, Applicant's arguments with respect to claim 1, 3-11, 13-20, 22, 23 and 25 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

9. The prior art made of record, listed on form PTO-892, and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jay A. Morrison whose telephone number is (571) 272-7112. The examiner can normally be reached on M-F 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Vo can be reached on (571) 272-3642. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Tim T. Vo/
Supervisory Patent Examiner, Art Unit 2168

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